

WHAT IS CLAIMED IS:

Claim 1. A holder for maintaining substrates in an array in which the substrates are subjected to a high throughput materials deposition process comprising:

a block assembly comprising a face plate, middle plate and retainer plate attached in sequence and aligned in an axis in which a plurality of cylindrical substrates are maintained in cylindrical chambers formed in an array with respect to the face surface of the block assembly and in which the substrates are positioned within the chambers by a spring mechanism during the processing of the substrates, and removable therefrom after the completion of processing.

Claim 2. The holder of claim 1 secured to a programmable x-y table in a PVD process in a relationship in which the focus of the PVD plasma source and the surfaces of the substrates maintained in the holder are in approximately the same plane.

Claim 3. The holder of claim 1 or claim 2 in which the substrates are arranged in columns and rows in a matrix in the block assembly.

Claim 4. The holder of claim 3 in which the relationship of the number of substrates in the rows to the number of substrates (N) in the columns is $rows_N = columns_N$.

Claim 5. The system of claim 3 in which the relationship of the number of substrates in one column to of the number of substrates in an adjacent column is substrates in column_N = N and substrates in column N+1 = N+1.

Claim 6. The system of claim 3 in which the relationship of the number of substrates in one row to of the number of substrates in an adjacent row is substrates in row_N = N and areas in row N-1 = N-1.

Claim 7. The holder of claim 1 or claim 2 in which the substrates are arranged in an array in which the location of each substrate in the array is capable of being positioned with respect to a defined point by a programmable x-y table.

Claim 8. The holder of claim 1 comprising a block including a multiplicity of substrates comprising longitudinally extending cylindrical electrodes maintained in an array of cylindrical columns in the block.

Claim 9. The holder of claim 8 in which upper surface of the electrode is inset within the block such that the transverse cross-section area of an opening in the upper surface of the column in the block in which the electrode is positioned is less than the transverse cross-section area of the upper surface of the electrode.

Claim 10. The holder of claim 8 or claim 9 in which a mask is positioned within a column in the block adjacent the upper surface of the electrode maintained in the column.

Claim 11. The holder of claim 8 or claim 9 in which a retainer and spring are positioned within a column in the block between the lower surface of the electrode maintained in the column and the retainer plate.